More than skin colour: challenges of diagnosis and managing Raynaud's phenomenon in a Kenyan lady

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Abstract

We report the case of a 35-year-old female with Raynaud's associated with mixed connective tissue disease. The patient presented with a two-week history with pain, ulceration, and "darkening" of her fingers and feet. She had been diagnosed with mixed connective tissue disease two years earlier and had Raynaud's as one of the symptoms. She was subsequently lost to follow up due to financial constraints. Despite our efforts, we were not able to save her limbs from amputation.

Introduction

Raynaud phenomenon is defined as reversible spasms of the peripheral arteriole in response to cold temperature or emotional stress[1]. The phenomenon manifests clinically by the sharp demarcation of colour changes of the skin of the digits. It is classified into primary Raynaud's phenomenon and secondary Raynaud's phenomenon according to the underlying aetiology such as systemic lupus erythematosus and systemic sclerosis. Abnormal vasoconstriction of digital arteries and cutaneous arterioles due to a local defect in normal vascular responses are thought to be the underlying cause of the primary form of this disorder[2]. The goals of therapy are to improve quality of life and to prevent ischemic tissue injury. Severe cases of Raynaud's can lead to ulceration and gangrene of the affected extremities. We describe a case of severe secondary RP in a black African woman from a resource-limited setting, and the difficulties encountered in the diagnosis and management

Case report

A 35 year old female diagnosed with mixed connective tissue disease returns to the rheumatology clinic after 2 years with pain, ulceration, and "darkening" of her fingers and feet of two weeks duration. The pain had progressively worsened over the same duration with minimal relief from over the counter diclofenac. She had initially been diagnosed with systemic lupus erythematosus based on Raynaud's, malar rash, oral ulcers, photosensitive dermatitis and positive dsDNA. She was initially put on aspirin, hydroxychloroquine, and prednisone. During subsequent follow up she developed worsening Raynaud's, arthritis, symptoms of proximal myopathy and skin tightening over the face, fingers and hands. Her lab tests showed elevated CRP and ESR with a negative antinuclear antibody, rheumatoid factor, and anti-citrullinated peptide. Due to finances, we were not able to do further investigations. Her diagnosis at this time was a probable mixed connective tissue disorder. She was added methotrexate and nifedipine. She did not return for a subsequent follow up at the rheumatology clinic partly due to financial constraints. The general examination revealed wasted patient, pedal edema and elevated blood pressure 151/113 mmHg. The right lower limb had dry gangrene over the right foot on all digits while the left foot had gangrene over digit 4 and 5 with intact pulses (Figure 1). The examination upper limbs revealed fixed flexion deformities on all fingers with gangrene on the left hand on digit 5 and right hand over digit 2,3 and 5 (Figure 2). She was admitted and put on nifedipine 40mg twice a day, methotrexate 10mg weekly, atorvastatin 40mg nocte, hydroxychloroquine 200mg twice a day, tramadol 100mg twice a day and sildenafil 25 mg twice a day. We pulsed with methylprednisone for 5 days when the gangrene did not improve despite the treatment as we have no access to iloprost. She had a normal arteriogram. With no improvement, she is due for amputation of the affected limbs and digits.

Figure 1: Gangrene in the lower limbs

Figure 2: Gangrene in the upper limbs

Discussion

Raynaud phenomenon presents as recurrent vasospasm of the fingers and toes and usually occurs in response to stress or cold exposure[1]. It was first described by Maurice Raynaud, who, as a medical student, described a case in 1862 as "episodic, symmetric, acral vasospasm characterized by pallor, cyanosis, suffusion, and a sense of fullness or tautness, which may be painful[2]. The prevalence of primary Raynaud phenomenon varies among different populations, from 4.9%-20.1% in women to 3.8%-13.5% in men[1]. Raynaud's is more common among young women, younger age groups, and family members of patients with the phenomenon[1,2]. There's no epidemiologic data on this phenomenon from Africa. Our patient had mixed connective disease. Other autoimmune causes of secondary Raynaud's include scleroderma, systemic lupus erythematosus. Other causes include drugs (cisplatin, bleomycin, beta-blockers, amphetamines etc). Occupational and environmental causes such as vascular trauma (the use of vibrating tools, carpal tunnel syndrome, injury to the distal ulnar artery etc), hypothyroidism and haematologic abnormalities such asparaproteinemia and cryoglobulinemia[3-5]. It has been proposed that the pathogenesis of secondary Raynaud's surrounds dysregulation of the neuro endothelial control mechanisms. There is evidence that suggests that it involves abnormalities in the blood vessel wall (endothelium and smooth muscle), neural control of vascular tone and a deficiency of vasodilatory mediators, including nitric oxide, has been implicated[6].

Raynaud's usually affects the fingers and toes but may rarely affect the nose, ears, nipples, or lips. This presents as either colour changes white (pallor), blue (cyanosis), and red (hyperemia) or numbness and pain in the affected area or areas. Primary Raynaud's is usually benign. The attacks are usually symmetrical and lack evidence of peripheral vascular disease, tissues necrosis, ulceration, or gangrene[7]. Secondary Raynaud's is characterized by tissue necrosis, ulceration, and gangrene-like our case[7]. The diagnosis of Raynaud's in black skin still remains a challenge as it may be difficult to appreciate the typical triphasic colour changes. Having a high index suspicion and identifying secondary aetiologies can be useful as some of the diagnostic tests, for example, ANA and anti-Scl 70 anti-bodies may be too expensive in a set up like in Kenya.

The goals of therapy are to improve quality of life and to prevent ischemic tissue injury.The efficacy of the treatment depends upon the severity of disease and upon the presence or absence of an underlying disorder. First line therapy for primary Raynaud's consists of patient education, lifestyle measures like avoiding precipitating factors like keeping warm, cessation of smoking etc. Avoidance of sympathomimetic drugs (such as decongestants, amphetamines, diet pills and herbs especially those that contain ephedra) are usually recommended. However no trials have been performed to assessing the impact of over-the-counter preparations for example cold medications[7]. The Raynaud Condition Score (RCS) can be used to assess response to treatment. RCS is a validated tool that looks at the frequency of attacks, the duration of attacks, the disability caused, and the overall effect on daily quality of life[8,9]. The RCS uses a visual scale of 0 to 100; a change of about 15 is the minimum change considered clinically important[8,9]. Pharmacotherapy should be considered when nonpharmacologic treatment measures alone are insufficient to adequately reduce the frequency and severity of attacks. Calcium channel blockers that have proven effective for primary and secondary Raynaud phenomenon as the initial choice for drug therapy. Slow-release or long-acting preparations of the dihydropyridine calcium channel blockers, such as nifedipine or amlodipine are preferred[10]. Recommendations are to start at the lowest tolerated dose and titrate depending on response and tolerability. Those unable to tolerate alternative therapies include phosphodiesterase-5 inhibitors, angiotensin inhibitors, topical nitrates and local injection of botulinum toxin type A[11,12]. For patients who experience persistent intense pain, ulceration, and gangrene combination of calcium channel blockers with phosphodiesterase-5 inhibitors, endothelin receptor antagonist (bosentan) and prostaglandinanalog (iloprost, epoprostenol)[11,12]. We think our patient may have benefited from prostaglandin analogs. These class of drugs are currently unavailable in Kenya. Multiple studies have examined the efficacy of treatment of severe refractory RP and ischemic digital ulcers with preparations of prostaglandin analog[13,14]. Bosentan reduces the incidence of new digital ulcers[7]. Another option for our patient would have been sympathectomy. In patients with digital ulceration with critical ischemia, when oral and/or topical vasodilatory therapy does not quickly result in improvement in digital blood flow and when IV PG are not readily available, there is evidence that temporary chemical sympathectomy is performed with a digital or regional block[15].

It's unfortunate the patient presented late with gangrene affecting several digits. With the unavailable prostaglandin analogs and sympathectomy, the only other treatment available was amputation.

Conclusion

This was a case of Raynaud's with critical ischemia in a black African lady in a resource-limited set up in Nairobi. We have highlighted shortcomings and lessons learned from this case. This would have avoided the drastic option of amputation in a lady in her income-generating age. Diagnosis of Raynaud's in black African skin needs to be reviewed so as for enhancing early diagnosis and appropriate management, especially in a resource-limited setup.

Competing interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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